with the upper fan case cowl and secured thereto by mechanical fasteners such as bolts and nuts. The nacelle also includes a lower fan cowl **108** having an inlet portion **110** integral with a lower fan case cowl portion **112**. The lower fan cowl **108** is separably joined with bolts and nuts to the upper fan cowl **102** along essentially axial interfaces **114***a*, **114***b*. The fan duct outer wall **42'** includes both left and right outer walls **42***a*', **42***b*' each of which is secured by a hinged joint **45'** to a corresponding hinge beam portion **43'** of the upper fan case cowl **104**. The core cowl **44**, comprises left and right core cowls **44***a*, **44***b* each of which is connected to the engine mount beam by hinges internal to the core cowl. The core exhaust nozzle **46** is bolted to a flange on the core case.

The nacelle of the present invention is used with engines mounted external to the main structure of the aircraft. Examples of externally mounted engines include those suspended under an aircraft wing or cantilevered laterally from the fuselage. By contrast, internally mounted engines are exemplified by those located within the fuselage structure, as is common in military fighter aircraft, or mounted within the tail structure of some commercial airliners.

During aircraft maneuvers the nacelle may experience a nacelle aerodynamic force distributed nonuniformly over the nacelle surface both axially and circumferentially. Because the nacelle of an externally mounted engine is not directly supported by the aircraft structure, which would be capable of absorbing forces acting on the nacelle, the nacelle aerodynamic force can significantly deflect and distort the nacelle. For example, referring again to FIG. **1**, the nacelle may experience an essentially upwardly directed nacelle aerodynamic force F during takeoff. The nacelle may deflect and ovalize so that over a portion of its circumference, the nacelle deflects radially inward, however, cavity **40** precludes contact and, therefore, force transmittal between the nacelle and the fan case. The flexible seals **36**, **38** deflect to accommodate the deflection of the nacelle relative to the fan case without conveying any significant force into the fan case. Instead, the force is transmitted around the circumference of the nacelle and then directly from the nacelle to the pylon beam and the aircraft along load path P1, effectively isolating the engine from the case ovalizing and backbone bending influences of force F. Forces other than the nacelle aerodynamic force, such as engine weight, engine thrust and lateral wind gusts, that do not contribute to ovalization and backbone bending are transmitted through the mount links sets **88**, **90**, **92** to the engine beam, subpylon and pylon beam.

The above described operation is better appreciated when contrasted with that of a conventional nacelle and mounting system shown in FIG. **7**. In the conventional arrangement, a nacelle **120** includes an inlet **122** firmly secured, as by a bolted joint **124** to the fan case **125**, an intermediate fairing **126** which is a pair of essentially 180° access doors connected by hinges **148** to a forward extension **146** of the pylon **140**, and an aft fairing **128** including two essentially 180° fan duct outer walls **130**, each connected by hinges **147** to the pylon forward beam extension **146**, and an inner core cowl **132**. A plurality of fan struts, as represented by struts **134**, extend generally radially to connect the fan case **125** to the core case **136**. Three sets of mount links **152**, **154**, **156** connect the engine to the pylon **140** which itself is attached to the aircraft at pylon-to-aircraft mount fittings **142**, **144**. Forward mount link set **152** is a set of two links that transmit vertical and lateral forces, axial mount link set **154** is a set of two links that transmit axial forces, and aft mount link set **156** is a set of three links located aft of the forward link set to transmit vertical forces, lateral forces and torque.

The nacelle aerodynamic force F ovalizes the inlet **122** and, due to the rigid joint **124** between the inlet and the fan case **125**, ovalizes the fan case as well, causing the fan case to contact the fan blade tip, thereby eroding the blade tip seals (not shown) on the inner surface of the fan case radially outward of the blade tips. The force F is also transmitted around the circumference of the nacelle and along load path P2, illustrated by broken lines, from the inlet to the fan case and then through the fan struts to the core case where it is reacted at the forward and aft mount link sets. The reaction forces Fr**1** and Fr**2** exerted by the mount links on the engine case act in concert with force F to bend the cases and cause the adverse effects previously described. Furthermore, because all of the forces and torques acting on the engine or nacelle are transferred to the pylon, the pylon is a relatively large component having substantial surface area exposed to the supersonic fan flow stream downstream of the fan duct discharge plane. Consequently, the pylon creates significant drag which degrades the aerodynamic efficiency of the aircraft.

Referring again to FIGS. **1** and **2**, further features and advantages of the preferred embodiment can now be appreciated in light of the foregoing discussion. The pylon beam **64** of the present invention must withstand all of the forces and torques acting on the engine. However, the nacelle aerodynamic force F is conveyed directly to the pylon beam from the nacelle, thereby bypassing the engine cases so that the large, bulky pylon beam need not extend across the fan flow stream **54**. Instead, the pylon beam is located radially outward of the fan flow stream and only the subpylon **68**, which does not transmit nacelle aerodynamic forces and, therefore, is smaller than the pylon of conventional mount systems, extends across the fan flow stream. Thus, the direct transfer of nacelle aerodynamic forces from the nacelle to the pylon beam contributes to drag reduction by minimizing the surface area of components exposed to the fan flow stream, and particularly to the supersonic flow downstream of the fan duct discharge plane.

Minimization of the subpylon size is facilitated in the preferred embodiment by locating the torque reacting link set **88** forward of the link set **92** that reacts only vertical and lateral forces. Regardless of where the torque reacting link set is located, the torque reaction must be conveyed to the pylon beam through the subpylon. If torque were reacted at the aft link set (as is conventional) a structural framework corresponding to the subpylon would have to cross the fan flow stream downstream of the fan duct discharge plane to transmit the torque reaction vertically to the pylon beam. A streamlined skin, or an extension of the subpylon skin **70** would have to enclose the structural framework, creating additional drag and possibly negating the drag reduction benefit obtained by locating the pylon beam radially outward of the fan flow stream. Another way to transfer torque from the aft link set to the pylon beam would be to transfer it forward through the engine mount beam **72** and then through the subpylon structural framework **69**. While this latter approach would possibly reduce the subpylon size, it would also require additional engine mount beam weight to accept the torque reaction along the beam's entire axial length. By reacting torque at the forward link set, the invention in its preferred embodiment takes advantage of the most practical positioning of the subpylon (approximately axially coincident with the engine center of gravity and the forward mount link set) to minimize the subpylon surface area exposed to the fan flow stream without increasing engine mount beam weight. Most preferably, the subpylon is small enough to be positioned entirely within the fan duct **50** where it is exposed